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near the spring. Two empty nests found on June 16 were placed in scrub oaks on sloping limbs about six feet from the ground.

104. ***Sialia mexicana bairdi*** Ridgway. WESTERN BLUEBIRD.—A few of these birds were found among the Yellow Pines on the hills above the lake. They were nesting here and were observed at frequent intervals.

105. ***Sialia currucoides*** (Bechstein). MOUNTAIN BLUEBIRD.—The Mountain Bluebird was common about Lake Burford, ranging from the lake shore to the tops of the hills. A nest found May 25 near the cabin was placed in a cleft between two forking limbs of a cedar four feet from the ground. A cavity about ten inches deep had rotted out here and the bluebirds had built in the bottom of it. Immediately beside the opening was a notice printed on muslin, posted by Biological Survey trappers to warn against the theft of wolf traps. The nest when found contained five eggs that hatched about June 3. It was interesting to note that young were found out of the nest among the pines on the hills on May 26, another instance of the fact that the season was farther advanced on the hills than it was in the valley below.

*U. S. Biological Survey, Washington, D. C.*



## NOTES ON THE BREEDING HABITS OF THE RUSTY BLACKBIRD IN NORTHERN NEW ENGLAND.

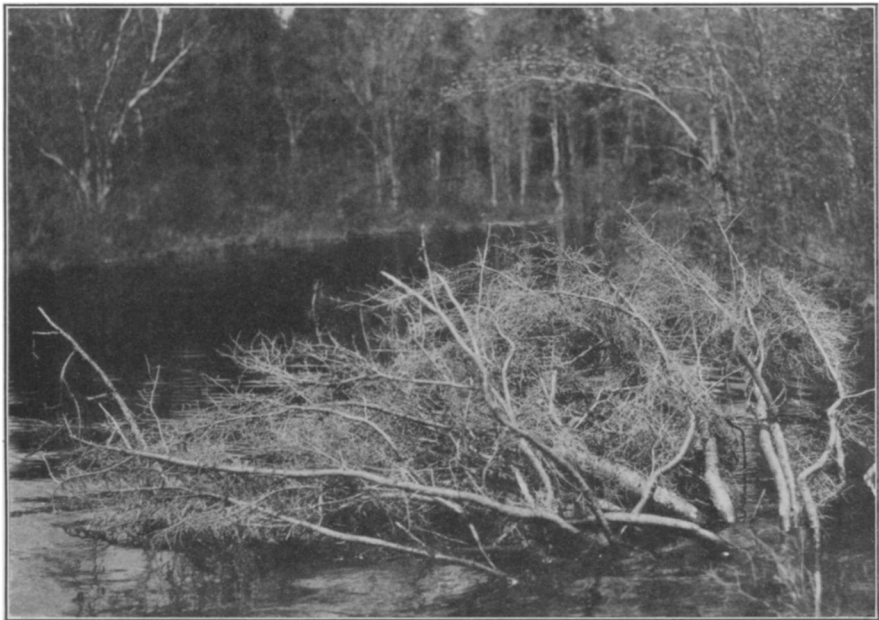
BY FRED H. KENNARD.

### *Plates XIX-XX.*

WHILE the Rusty Blackbird is a common spring and autumn migrant in New England, and is known to breed along our northern boundaries, but little seems to have been written about its nesting habits, except by Bendire, who has described them in some detail; while its eggs are comparatively rare in collections. Hence, in the spring of 1914, I fell a victim to the blandishments of Owen Durfee and agreed to join him in a hunt for their nests. I had noted Rusty Blackbirds several seasons before, while fishing for landlocked salmon in Essex County, away up in the north-east corner of Vermont, and thither we decided to journey.



1



2

NESTING SITES OF RUSTY BLACKBIRDS

1. On top of old stump.      2. In stranded Spruce bough.

As the limited space at my disposal will not allow of the telling of all the pleasures and disappointments of our quest through this and succeeding seasons, I shall try merely to give an account of the nests we discovered, with a brief description of the surroundings of each, and then tell collectively of the bird's habits as I observed them.

Carefully, as we thought, arranging the time of our hunt so as to find freshly laid sets of eggs, we were on the ground on May 30, and on the 31st succeeded on finding two nests, both with young birds.

One containing four young birds, two or three days old, was placed about six feet up, against the trunk of a small, thick-growing spruce, on the edge of a thicket of evergreens, growing in a swamp at the end of a small trout pond.

The other, containing three young birds one or two days old, and one addled egg, was placed about seven feet up, between the trunks of two spindling little balsams in an almost impenetrable clump of evergreens. This was beside a logging road, perhaps twenty-five yards back, on the bank of an inlet to a large lake.

As the season hereabouts had been late this year and the woods and swamps were, I am told, still deep in snow during the first week in May, these birds must have started their nest building before the snows disappeared.

In 1915 we were again in the field after the Essex County birds, and determined to be there on time. May 21 found us in camp, and we spent the morning in a fruitless hunt for the trout pond birds, which had apparently moved back into the swamp, and in the afternoon succeeded in finding two nests on the shore of the larger lake. The first contained four young birds, and was placed about eight feet up, between the tops of two thin little spruces in a thick clump of evergreens. This undoubtedly belonged to the same pair of birds whose nest we had discovered last year, and was only about fifty yards from their last year's location. These eggs must have been laid by May 5 and the nest started in April, sometime before the snow is ordinarily out of the woods in this region. While the month of May had been exceedingly cold, wet, and disagreeable, the weather during April had been warm and fine, and this perhaps may account for the unusually early nesting of the species this year.

Later in the day we discovered another nest, about a quarter of a mile away, containing five eggs, too hard set to save, placed about five feet above the ground, between the tops of two stocky little spruces, in a thick second growth of evergreens. This nest was on the bank, well above the level of the lake, and perhaps fifty yards from its shore.

Disappointed but not discouraged we continued our hunt for a week; and finally on May 27, located another nest over in Coos County, New Hampshire, with four young two to three days old. This nest was in a swamp at the end of a small pond, and was about six feet up in a small dead spruce standing out by itself.

The top of the tree had been broken, and bent over at an angle of about forty-five degrees, and here just below the break, in a tangle of dead branches and usnea moss, the nest was placed. About this time our enthusiasm began to ooze and we returned home, to resume the hunt in 1916.

May 19, 1916, found us again in Essex County, and this time we were rewarded by finding a nest and two fresh eggs. I took the set of four on the 22d, after visiting the nest twice daily. This probably belonged to the same pair whose nests we had found the two previous seasons, and located perhaps fifty feet from their last year's nest, was built about five and a half feet up, in a little spindling spruce, in an almost impenetrable thicket, close to the shore. The female was sitting on her eggs at each of my several visits, though she flew off silently upon my close approach.

I did not get over into New Hampshire this year, but on May 29, Durfee visited the location of the last year's nest, that we had found in the swamp, and again found young birds three to four days old. This nest was perhaps fifty feet from last year's, and was placed about six feet above the surface of the swamp against the trunk of a small spruce.

I was unable to do any collecting in 1917, but on May 16, 1918, was again in the field, this time with Mrs. Kennard, in Penobscot County, Maine, about seventy-five miles northeast of Bangor, where I had seen Rusties while on a fishing trip during a previous season. There is a trout brook there, that for the last hundred yards or so, flows through a swamp before joining the waters of a

small lake. Because of the shyness of the bird, and the fact that incubation had not yet begun, it was not until May 21, that we finally succeeded in locating the nest, with two fresh eggs, in a dead spruce top, that had floated down the stream in the spring floods, and become stranded near its mouth. It was only a foot above the surface of the water, in a tangle of usnea moss, and so well hidden that we had paddled by it in our canoe time after time without ever suspecting its presence. The nest was visited daily until the 24th when I took it with five eggs.

On June 5, I found the second nest of this pair, containing five eggs,—this time perhaps a hundred yards back in the swamp, about twenty feet up, in a tall, unhealthy looking spruce. It was placed in one of those thick bunches of evergreen twigs that sometimes grow close to the trunk of a spruce, and could not be seen from the ground. They had built this second nest and laid five eggs in exactly twelve days.

On June 16, I found their third nest, containing four eggs, this time it was built near the first nest, beside the brook, in a tangled growth of sweet gale overhanging a ditch, and about two feet above the water. They had finished this third nest and laid four eggs just eleven days after the taking of the second nest. I felt like a pirate in taking it, but wanted to find out how persistent these birds could be under continued adverse conditions.

I was called home at this time, but on July 14, returned to the woods, and found their fourth nest. This time they had built upon the opposite side of the brook, about ten feet back from the edge of the stream, in a thick growth of button-bushes. The nest was placed in a crotch, a couple of feet above the water, just as a Red-wing's would have been, and contained three young birds only a few hours old, and one egg which hatched the next morning. The young were watched daily till fledged. Allowing fourteen days for incubation, it appears that this industrious pair built their fourth nest and laid this last set of four eggs, in fourteen days, a remarkable and exceptional performance, as other pairs left at once when their nests were taken.

On June 10, I found another nest containing four eggs, in various stages of advanced incubation. This was placed about four feet up against the trunk of a comparatively isolated, thickly

branched small spruce, back on dry land about seventy-five yards from the shore of a large lake. The nest was normal in construction and position, but the eggs closely resembled, except in size, those of the Bronzed Grackle,—so much so, that had I not found the nest myself, and had a close view of the very distressed old birds, I should have had grave doubts as to their identity.

The spring of 1919, found me again in Penobscot County, where I succeeded in finding the following nests:

On May 19, I again discovered the nest of the trout brook birds, placed about five feet up, in a thin clump of slim spruces, close beside a logging road that leads through the swamp there. I took the eggs, evidently slightly incubated, supposing that they would build another nest, as they had done last year, and which I could watch from start to finish. My intentions, however, seem not to have been appreciated, for they promptly disappeared and were not seen there again during the summer, discouraged no doubt, and who could blame them.

On May 25, in Washington County, Maine, I took a nest with five perfectly fresh eggs, the first I had ever seen, as in all sets taken previously, incubation had apparently begun with the laying of the first egg. This nest was built about two feet up in a little, low black spruce, one of a clump on a floating island, in a swamp caused by raising the waters of the large lake on which it was situated.

A nest discovered on May 27, in Penobscot County, contained five recently hatched young. This nest, near the shore of a large stream, bordered by miles of dead wood, was placed about eight feet up, and absolutely hidden in a matted tangle of dead limbs and usnea moss, where a big spruce had fallen across a smaller one.

On June 5, also in Penobscot County, I found still another nest with four unincubated and slightly addled eggs, built about five feet and a half above the ground, in a small thick spruce, in a clump of evergreens a few feet from the shore of a large lake. This nest had evidently been deserted.

Arriving in southern New England usually in the latter part of March, or early in April, these birds loiter along on their leisurely migration, and arrive on their breeding ground along our



NEST AND EGGS OF RUSTY BLACKBIRD



northern borders late in April or early in May, about the time the ice goes out of the lakes and often before the snow is melted in the surrounding woods and swamps. Here they spread out through their accustomed haunts, along the shores of the secluded lakes and ponds, among the swamps, or along the brooks and streams, showing a particular fondness for the "dry-kye" or dead-wood among the back-waters. To these places they return season after season. Though gregarious throughout most of the year, I have never found more than one pair in a given area during their nesting season. There may be colonies of Bronzed Grackles and Red-wings breeding close by, but never more than one pair of Rusties, ~~the~~ the nearest I have ever found them being a quarter of a mile apart.

C. J. Maynard in his 'Birds of Eastern North America' writes of some "perfectly inaccessible" "sloughs" in the Magdalen Islands, as follows: "I had observed Blackbirds about there on several occasions, but as they kept well in the centre of the large tracks, I could not make out at first what they were, but after a time found a large colony of Rusty Grackles were evidently building in one of the above described places." As Mr. Maynard seems to have been doubtful as to the identity of the birds in the first place, and later confesses that "all efforts to penetrate this fastness proved unavailing" this evidence as to these birds sometimes breeding in colonies seems hardly conclusive.

In northern Vermont and New Hampshire where the migration up the Connecticut valley seems to bring them early to their breeding grounds, they start their nest building early in May, while in eastern Maine, only a trifle farther north, they usually do not start until the middle of the month.

For sites they seem more apt to choose evergreens, preferably thick clumps of second growth spruce and balsam, though I have found them in dead trees or in clumps of deciduous bushes, button-bush and sweet gale, along the shores of some stream. Audubon writes of finding "their nest among the tall reeds of the Cats-tail or Typha." Samuels tells of nests along the Magalloway river in Maine, built in low alders overhanging the water, and Chapman records their having built upon the ground, though I can find no further record of their so doing.

My friend, William Lyman Underwood, tells me of a nest he found on June 19, 1900, in Penobscot County, Maine, built in the top of an old stump, standing in the water, out from the shore of a lake. and containing three eggs upon which the female was sitting. Owing to the difficulty of photographing the nest and eggs in situ, he had his guides saw off the stump, carry it across the lake, perhaps a quarter of a mile, to a beach where he could set it up and photograph it. They then brought the stump back, and replaced it securely upon its foundation; and the female returning, continued her parental duties and raised her young.

The nests in situ, are in the majority of cases difficult to photograph, because in the positions usually chosen, in thick clumps of low evergreens or bushes, the cutting necessary in order to set up one's camera and properly focus, would destroy the natural surroundings.

While, owing to their shyness, I have never been able to catch the birds at nest-building, I have examined a good many deserted nests besides those recorded above, and a careful examination of the nests in my collection shows their method.

In construction, those that I have seen, have all been particularly well built, rather bulky structures, and practically alike. A foundation is usually laid of usnea moss, sometimes in thick masses, and upon this they build their outside frame-work of twigs, usnea, lichens and occasionally a few dried grasses. In one of the nests in my collection the twigs used were mostly dead hackmetack, in another spruce, while in the remainder, twigs from deciduous trees predominated. This framework usually becomes thicker and more substantial as it progresses upward.

Within this outside frame they construct a well modeled hollow bowl, between five and one-half and six centimeters in depth, and between eight and one-half and nine and one-half centimeters inside diameter. This bowl, which seems to the casual observer to be made of mud, is in reality made of "duff," the rotting vegetable matter with which the ground of this region is covered, and which when dried becomes nearly as hard and stiff as papier mache; and shows their interesting adaptability to conditions, as real mud must at this season be hard to find. A cross-section of the nest shows the bowl to be of varying thickness, but averaging

between five and ten millimetres, and so pressed onto its surrounding frame as to become, when it hardens, a part of it.

After the bowl has been carefully modeled and smoothed off on the inside, it is lined with the fine, long green leaves of grasses that grow in the swamps thereabouts, and is finally topped off with dried grasses and fibres of various sorts, and a few thin, bendable twigs. In recently constructed nests I have found the green lining to be absolutely constant, although as incubation progresses, these grasses, of course, gradually turn brown. The diameter of the nest when finished, just across the outside of the bowl, averages about twelve centimetres, while the diameter of the entire structure, except for a few outreaching twigs, varies from fourteen to twenty centimetres. The usual measurements from foundation to top of bowl are from eight and one-half to nine centimetres.

Audubon in Vol. II of his 'Ornithological Biography,' writes that "The nest is not so large as that of the Redwing, but is composed of much the same materials. In Labrador I found it lined with moss instead of coarse grass. The eggs are four or five, of a light blue color, streaked or dashed with straggling lines of brown or deep black, much smaller than those of the Redwing, but in other respects bearing considerable resemblance to them."

Such nests as Audubon may have found, must, if they were Rusty Blackbirds', have been very exceptional, and the above information is certainly misleading. The female Rusty is considerably larger than the female Redwing, and builds a much larger and bulkier nest, and the eggs, four or five in number, are ovate in shape, larger, more fully rounded and less elongated than Redwing's, which they in no way resemble; and smaller than those of the Bronzed Grackle; the fifty-three in my collection averaging 25.57 millimetres x 18.56 millimetres.

Bendire describes them well as follows: "The ground color is a light bluish green, which fades somewhat with age, and is blotched and spotted more or less profusely, and generally about the larger end of the egg, with different shades of chocolate and chestnut brown and lighter shades of ecru, drab, and pearl-gray. The peculiar scrawls so often met with among the eggs of our Blackbirds are rarely seen on these eggs, which are readily dis-

tinguishable from those of the other species." As I have noted with other species, the last laid egg may be less heavily marked; particularly if the birds have been disturbed in previous settings. In the two last sets of the trout brook pair, the last laid eggs were grayer and without the glaze of the others. Apparently they run out of pigment towards the last.

The female usually starts incubation with the laying of the first egg, particularly in the early spring, when the weather is cold, and sits pretty close, flying off only upon one's near approach. Particularly shy birds may, when disturbed, disappear without uttering a note, but the great majority that I have observed will remain in the vicinity of the nest, uttering their loud "chips" of alarm, becoming more and more distressed, when disturbed, as incubation progresses, until after the hatching they are particularly vociferous. During incubation the male is very assiduous in his attentions to the female, feeding her frequently, and seldom flies far from the nesting locality. The female at this season is usually seldom in evidence, but by watching the male, one can soon determine by his actions the approximate locality of the nest. He has the very conspicuous habit of sitting on the top of some tall dead stub or tree, often with a nice fat grub in his bill and calling to the female. This call note is a two-syllabled "conk-ee," very similar to the three-syllabled "conk-a-ree" of the Redwing, but clearer and more musical, and usually distinguishable from the notes of the other blackbirds.

If disturbed by the proximity of watchers, he may delay for a while, uttering an occasional "chip" of alarm, but sooner or later he will fly close to the nest or to the top of some nearby stub, when the female will fly out to him, and with low "chucks" and much fluttering of wings, partake of the delicious morsel he has brought her. The knowledge of this habit, acquired during our second trip, greatly simplified our hunts during succeeding seasons.

It has so happened that I have never been able, from personal observation, to check up the exact time of incubation, but Bendire states it to be "about two weeks" and Dr. Bergtold states that it is "14 days."

The young, when hatched, are covered with a long, thin, fuscous natal down; and fed by both parents, at frequent intervals, de-

velop rapidly, as such young birds do. The nest is kept clean, and I saw the female frequently drop a white fecal sac in the nearby brook, as she flew away from feeding her charges. By the fifth day, the primary quills and other wing feathers are well under way, while the growths along the remaining feather tracts are starting; and slight slits begin to show between their eyelids. By the tenth day the young are well covered with feathers, through which some of their natal down still protrudes, and their eyes are nearly but not quite wide open.

A tragedy occurred to the only brood I was able to watch, for on the tenth day after hatching, one of the young was found in the water, about ten feet from the nest, dead and partially eaten. Whether he deliberately climbed from the nest, and later fell into the water, or was taken by some animal, will never be known, but the next day the three remaining young all climbed out into the adjoining bushes, it seemed to me, ahead of schedule time, for their eyes were hardly open, and they were still unable to fly.

They remained in the immediate vicinity of the nest for the next two days, climbing and hopping from bush to bush, with both parents in close attendance, till on the thirteenth day, they had learned the use of their wings; and in the evening the last one was seen to fly across the stream, followed by its mother, and to disappear in the swamp beyond.

The actions of the male, of this particular brood, were peculiar, for, after being very attentive to the female during incubation, he spent his days, as soon as the young had hatched, away from the locality, never helping the female in any way with her duties, except in the evenings, when returning with some other Rusties, that he had apparently been spending the day with somewhere, he would help feed the young, and spend the night in the vicinity.

As soon, however, as the young climbed out of the nest, he resumed his share of the parental duties throughout the day. Perhaps under normal conditions, he would have been taking care of the young of a first brood, while the female took care of a second.

Whether or not Rusty Blackbirds may occasionally raise a second brood, I am unable to say. I believe the Redwings do, for I have found their nests late in the season; and on July 20, 1918, in Washington County, Maine, I watched, for some time, a pair

of Rusties feeding fledglings. This was near a colony of Bronzed Grackles, and it is possible that their previous nests may have been disturbed, but it seems probable that this may have been a second brood.

About the middle of July, the Rusty families seem to desert their solitary breeding haunts, and again become gregarious, and are seen in small flocks, flying high overhead, between the lakes, or feeding along their shores, getting ready for their southern migration.

*Dudley Road, Newton Centre, Mass.*

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## THE GENERA OF CERYLINE KINGFISHERS

BY WALDRON DEWITT MILLER

In a note published in 'The Auk' (1918, p. 352) the writer advocated the union in one genus, *Megaceryle*, of all the large, conspicuously crested Ceryline Kingfishers. These had been divided by Mr. Ridgway (Birds N. and Mid. America, Pt. VI, 407) into *Megaceryle* and *Streptoceryle*. At that time I overlooked the fact that *Streptoceryle* might be inadmissible on nomenclatural as well as on zoological grounds.

### I. NOMENCLATURE.

In my 'Revision of the Classification of the Kingfishers' (Bull. Amer. Mus. Nat. Hist., XXX, 1912, p. 265) the type of *Megaceryle* Kaup, 1848, was given as *M. maxima* by subsequent designation of Gray in 1855. The early history of the genus *Megaceryle* is briefly as follows:

*Megaceryle* new subgenus, Kaup, 1848. Contained four species, all of which are still referred to it when the genus is used in the broad sense.

"*Megaceryle* Kaup," Reichenbach, 1851. (Handb. Alced.) The same species given by Kaup, (except that the Asiatic spec-